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ABSTRACT

The purpose of this study was to describe the frequency of occurrence of the cognitive style of field dependence in "new" students in the community college. The study sample consisted of 633 students from six community colleges, 379 of which had college admissions test scores available. Of these 379 students, 203 had scored at or below the thirty-third percentile ("new" students) and 84 scored at or above the sixty-seventh percentile (traditional students). Cognitive styles of the sample students were measured by the Group Embedded Figures Test, and preferences for social and structural aspects of the learning environment and for community college programs were measured by means of a questionnaire. Results of the study showed that the cognitive style of field dependence occurred significantly more frequently in "new" students than in traditional students, that field dependent students had preferences for college majors which emphasized interpersonal skills and for majors which involved writing and discussion, and that field dependent students preferred courses which were highly structured. Implications and recommendations for instruction, counseling, and institutional planning are presented, based on the needs and preferences of field dependent students. A bibliography and the preference questionnaire are appended. (JDS)

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A DESCRIPTIVE STUDY OF THE COGNITIVE STYLE OF FIELD DEPENDENCE-INDEPENDENCE IN THE NEW STUDENT POPULATION IN THE COMMUNITY COLLEGE

BY

KATHRYN JEAN MARTENS

SUMMARY OF ED.D. DISSERTATION

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A DESCRIPTIVE STUDY OF THE COGNITIVE STYLE OF FIELD DEPENDENCE-INDEPENDENCE IN THE NEW STUDENT POPULATION IN THE COMMUNITY COLLEGE

by

Kathryn Jean Martens

The purpose of this study was to describe the frequency of occurrence of the cognitive style of field dependence in the new student sample in the community college. A second research concern was to explore relationships between cognitive style differences and learning environment and program preferences.

In the present study, the Cross (1971) definition of the new student as those scoring at or below the thirty-third percentile on a conventional test of academic achievement was used. National norms of college admissions test scores were used to define the new student sample. Cognitive styles were defined as individual differences in information processing. The cognitive styles identified by Witkin, field dependence-independence, were used, and were defined as an articulated-global continuum of individual differences in information processing. They were measured by the Group Embedded Figures Test. Information on students' preferences

for social and structural aspects of the learning environment and for community college programs was collected on a Preference Questionnaire developed for this study (attached).

The total sample of the study consisted of 633 students from six community colleges. College admissions test scores were available for 379 of these students. Of these 379 students, 203 scored at or below the thirty-third percentile, forming the new student sample, and 84 scored at or above the sixty-seventh percentile, forming the traditional student sample.

In order to test the significance of the findings of the study two hypotheses were posed. Both posited that when the new student sample was compared with the other samples, there would be a significant difference in the frequencies of occurrence of field dependence. For the first hypothesis, new students were compared with traditional students, and for the second with the combined samples of traditional and other students. For both hypotheses it was found that the cognitive style of field dependence occurred significantly more frequently in the new student sample.

In order to relate the cognitive style differences of the students in the selected samples to educational planning in the community college, nine research questions were posed. Student responses to learning environment preference and program preference questionnaire (PQ) items were compared for field dependent vs. field independent students in the total sample, for new students vs. traditional students,

and for field dependent vs. field independent students within the new student sample.

The ten program preference items on the PQ were derived from previous research on the educational choices of four-year college students. In the field dependent student sample, significant correlations were found for nine of the ten items. All three samples, field dependent students, new students, and field dependent new students, had similar preferences for majors emphasizing interpersonal skills, majors involving writing and discussion, and for criminal justice as an elective. Field dependent students and field dependent new students also had similar preferences for electives in education and history.

Five of the ten learning environment preference items were based on research showing that field dependent individuals are more attentive to social cues in the environment. Significant correlations in the expected direction were found for two of these items. Field dependent students and new students indicated preferences for classes with small group work and teaching which stresses individual attention. The other five learning environment preference items were based on research showing that field dependent individuals are less able to provide structure for situations which lack inherent structure. Significant correlations for all three sample comparisons were found for one item. Field dependent students, new students, and field dependent new students

indicated preferences for classes where the teacher sticks to the outline for each class. Field dependent new students also indicated preferences for courses which are highly structured and where the teacher determines course requirements and how they will be met.

Questions were also asked regarding the relationship of program preferences to learning environment preferences in each of the student samples. The largest number of significant correlations between FD learning environment and FD program preferences was found in the field dependent student sample.

Conclusions and Discussion

Based on the analysis of data, several conclusions were drawn. Since the present study was a descriptive and exploratory study of new students in the community college, the conclusions presented are limited to that population and should be regarded conservatively as heuristic only. Conclusions are presented in the following areas: frequency of occurrence of field dependence in the new student sample, program preferences of the samples, learning environment preferences of the samples, and the relationship of program preferences to learning environment preferences for each of the samples.

Frequency of Occurrence of Field Dependence in the New Student Sample

The results of this study show that the cognitive style of field dependence occurs significantly more frequently in the new student sample than in the traditional or combined student samples. These findings confirm, for this sample of community college students, Cross' (1976) speculation that field dependent individuals may be overrepresented in the new student population. The similarities in the characteristics of field dependent individuals and new students (shown in Table 1) suggest that both groups show a tradition of doing poorly on measures which require analytical skills and that both groups show a strong interest in interpersonal activities. It would appear that these similarities probably exist for a significant portion of the new student sample.

A relationship of low scores on both the GEFT and college admissions tests for a significant portion of the new student sample does not imply the conclusion that field dependence is another measure of low ability. Witkin (1975), Messick (in Hodge, 1974), and Kogan (1972) have stressed the important distinction between styles and abilities in noting that abilities concern level of performance whereas styles concern the manner or form of cognition. Earlier studies by Witkin and others (1962) on the relationship of field dependence-independence to intelligence have shown a relationship to only the analytical field approach factor of IQ tests. Since college admissions tests contain verbal and

TABLE 1

SOME CHARACTERISTICS OF FIELD DEPENDENTS
AND NEW STUDENTS

Field Dependents	New Students
Like being with and relating to people. Well developed social sensitivity.	Spend leisure time with people. Report more important college learning experiences relate to getting along with others.
Attracted to careers and college majors emphasizing interpersonal relations.	Attracted to careers working with people.
Sensitive to the judgments of others. Tend to be guided by authority figures. Dependent on others for self-definition. Lack of independence and autonomy.	Low scores on tests of autonomy measuring independence of thought and judgment. Compliant to wishes and ideas of those in authority.
Extrinsically motivated; responsive to social reinforcement.	Motivation for education is extrinsic; high interest in grades, better jobs, higher salaries.
Poor at analytical problem-solving.	Low scores on Theoretical Orientation (TO) scale of OPI (Omnibus Personality Inventory), a scale measuring preference for analytical and critical thinking
Field dependent women favor traditional women's roles.	Career choices are strongly sex stereotyped.
Come from social and cultural backgrounds stressing obediance to authority and "tight" role definitions.	Come from blue-collar families. Favor traditional social values and respect for authority.

SOURCE: Cross, K. Patricia. Accent on Learning. San Francisco: Jossey-Bass, Inc., 1976, p. 123.

quantitative measures the relationship found by Witkin does not explain the occurrence of low scores found in this study.

It is possible, however, that other factors may influence these test scores. One factor which has probably not been given adequate consideration is the relationship of cognitive style to test-taking skills. According to Messick (1970), cognitive styles operate in testing situations and may influence the examinee's score. "It is quite possible that cognitive styles are already being reflected in standard evaluation devices; however, their operation under these circumstances is not being assessed for evaluation purposes but serves to contaminate the interpretation of other measures" (p. 196). Another factor which may explain the relationship between GEFT scores and college admissions test scores has been suggested by Cross (1976). It is possible that the way learning is structured in the schools may favor individuals with a field independent cognitive style. Cross suggests that "traditional education has been geared more to the style of field independents than to the style of field dependents, giving field independents the advantage in school situations" (p. 122). Since testing is such an integral part of the school situation this advantage may be reflected in test scores.

Cognitive styles are one dimension of individual differences. The intent of this study is not to suggest that style differences alone explain new student status. As the

data show, not all new students are field dependent. Many other factors may influence new student status; past achievement, ability, interest, motivation, or even a bad day when the test was given. Factors such as these are important and should also be considered when educational programs are being developed for new students. Cognitive styles are important because they provide information on how an individual processes information rather than how much of it he has learned or why he might be interested in learning it. Cognitive style information can be useful in suggesting teaching strategies and is particularly critical to a student population, such as new students, where past educational experiences have not led to much success.

Based on the analysis of the data for the hypotheses of this study, it can be concluded that for new students in the community college the cognitive style of field dependence has significant educational implications for work with new students in the community college. This conclusion lends support to the suggestion by Cross (1976), Kogan (1972), and Witkin et al. (1975) that the cognitive styles of field dependence-independence have important implications for education. Some specific implications are contained in previous research. Others are suggested by the results of the analysis of the research questions of this study.

Program Preferences

The ten items in the program preference section of the preference questionnaire were designed to compare the

educational choices of the various student samples. Most of the questions for this section of the preference questionnaire were derived from previous research on the educational choices of field dependent and field independent four-year college students. It should be noted that the data describing four-year college students were obtained from the results of interest inventories and actual educational choices. While it is speculative at best to compare the results of a preference questionnaire with such findings, certain conclusions merit discussion.

In this sample of community college students, field dependent students, new students and field dependent new students have similar preferences for majors which emphasize interpersonal skills and for majors which involve writing and discussion. These findings support previous studies (e.g., DeRussey and Futch, 1971; Osipow, 1969; Witkin et al., 1975) which show that field dependent college students tend to choose areas of study emphasizing interpersonal skills (such as, education, humanities, and sociology) rather than areas requiring analytical skills (such as mathematics and science). These findings also support the Cross (1971) research that new students prefer careers which involve working with people. It can thus be concluded that field dependent new students in the community college prefer, and therefore may be more likely to enroll in courses and programs which emphasize interpersonal skills.

In addition to these findings on preferences for types of majors, significant correlations for the areas of specialization and the majors selected by field dependent four-year college students were found in the field dependent student sample. Thus, the program preference results for this sample of 222 field dependent community college students support the findings of previous researchers and suggest that field dependent community college students may tend to make the same educational choices as other field dependent college students. Community college educators may expect to find significant numbers of field dependent students in courses in education, the humanities, and the social sciences.

The same significant correlations were not found in the field dependent new student sample. This may, in part, be due to the smaller sample of field dependent new students. However, it may also be that the combination of new student status and a field dependent cognitive style compounds the lack of both interest and success in education. It is possible to speculate the field dependent new students have given less thought to specific college programs.

Since specific areas of study selected by four-year college students are not available as majors in the community college, students in this study were asked which area of study they would prefer as an elective. Two questions regarding preferences for subject areas specific to the community college were also included. The designation of these

subject areas as field dependent or field independent was based on the results of the field test. The one subject preferred as an elective by field dependent students, new students, and field dependent new students in this study was criminal justice. Although it is speculative to base conclusions on the results of one item, the significant preference for criminal justice may indicate that this and other community college programs will show differential enrollment by field dependent and field independent students in general, and field dependent and field independent new students in particular.

Learning Environment Preferences

Ten items on the PQ were designed to explore whether certain research findings on the learning behaviors of field dependent and field independent individuals would be similar to preferences for different aspects of the community college learning environment. It should be noted that some students expressed difficulty in making choices on this section of the Preference Questionnaire. These students reported that they had not experienced all of the choices provided and therefore found it difficult to indicate preferences for one over another. The greatest number of those expressing difficulty were developmental students. This is particularly significant for the present study since large numbers of new students and field dependent students were enrolled in developmental classes.

The five social items in this section of the PQ focused on the tendency of field dependent individuals to be particularly attentive to the social surroundings (e.g., Goodenough and Witkin, 1976). From these research findings it was inferred that field dependent individuals might prefer classroom situations stressing interaction with others. While few significant correlations were found for the items it is important that both field dependent students and new students preferred classes stressing small group work and individual attention. Such findings support, at least in part, previous research on the importance of the social surroundings to field dependent individuals. This aspect of the learning environment may be important in other classroom situations not assessed by this study.

These preferences for social aspects of the learning environment were not found in the field dependent new student sample. Thus, the importance of social referents in the learning behavior of field dependent individuals is not supported for this sample. It is possible that the method of this particular study was not appropriate for students who had not experienced these choices and thus contributed to the lack of significant findings in this area. Since many of the students who expressed difficulties with these questions were developmental students, they were quite possibly also field dependent new students. It may be concluded that a better way to determine the importance of the social aspects of the learning environment for field dependent new students

is needed. Emphasis should be placed on determining their achievement in learning situations which stress these social aspects. This suggestion is supported, at least in part, by recent research by Roueche (1976).

The additional five items, derived from research showing that field dependent individuals are less able to provide structure to situations which lack structure, were designed to assess preferences for various teaching strategies which provide structure. It was found that field dependent students, new students, and field dependent new students indicated preferences for courses where the teacher followed the outline and that field dependent new students also preferred courses which were highly structured and where the teacher determined how the requirements would be met. These findings appear to lend support to the previous research on the importance of providing structure for field dependent individuals.

It is unclear why students preferred certain aspects of structure and not others. However, from the three preferences of field dependent new students, it is possible to conclude that at least some aspects of structure are important in the learning environment of these students. It is also possible that the importance of these structural aspects may vary according to subject and the individual's past achievement in the subject.

Relationship of Program Preferences to Learning Environment Preferences

In addition to comparing the responses of the paired samples on learning environment and program preferences, the relationship of program preferences to learning environment preferences was analyzed within each of the samples. Only one significant correlation was found for the field dependent new student sample. This relationship was between a learning environment preference for highly structured classes and a program preference for an elective in history. No significant correlations were found between program and learning environment preferences for the new student sample. The high number of significant FD correlations (40) found in the field dependent student sample testifies to the validity of the PQ as a measurement instrument.

From the results of the analysis of the data for the hypotheses and research questions of the study it can be concluded that the cognitive style of field dependence has important implications for community college educators. The data from the program preference questions showed more significant correlations and thus provided more specific conclusions than the learning environment preference data. However, even the limited conclusions that can be drawn regarding the learning environment preferences of the field dependent students and field dependent new student samples suggest that both social and structural aspects of the learning environment merit consideration in planning. The most

significant result of the study is the conclusion that a significant number of new students have a field dependent cognitive style. Such findings suggest that the previous research on field dependence may be useful to community college educators. This is particularly important because it suggests that there is additional information on individual differences which may be helpful in better serving at least a segment of those students who are experiencing academic difficulties.

Implications and Recommendations for Future Research

The findings of this study suggest implications for both practice and research in the community college. Since the use of cognitive style in the community college is new these two areas are interrelated. Practitioners should not have to wait for further studies on new students before they begin to implement previous research on field dependence-independence. However, because previous research has not been done in community colleges, it should be regarded as needing a research base with new students. Because these areas are related, implications and recommendations are presented together. They focus on three areas: instruction, counseling, and institutional planning which includes institutional research and staff development.

Instruction

For faculty in the community college a major implication of this study is derived from the finding that large numbers of students in the new student sample and in the total sample have field dependent cognitive styles. Community colleges have often stressed the importance of considering individual differences in the instructional process. However, the current focus seems to be individualizing the rate of instruction. As Sperry (1972) notes, "individualized instruction adapts to the learner's rate of learning, but it is also known that rate is only one dimension of an individual's learning style" (p. 3). The results of the present study suggest that cognitive style is another dimension of individual differences which has implications for instruction.

Cross (1976) has already speculated that one of the implications is that much of education is geared to the style of field independent individuals. Previous research (Witkin et al., 1975) has shown that field dependence-independence is not related to grades in college but is to some degree in the public schools. The extent of the relationship between field dependence-independence and academic success in the community college should be investigated. Such research should take into account differences in programs and in colleges.

If much of what is done in education does favor the information processing style of the field independent

student, faculty should consider the implications of their present instructional methods for field dependent students. If much of the content of the course is presented in an analytical style, faculty should find out if students experiencing difficulty with the course have a field dependent cognitive style. This may be particularly important in courses which research has shown are chosen by field independent students, such as mathematics and the sciences. In classes where field dependent students seem to be having difficulty or where large numbers of students may have a field dependent cognitive style, particular attention should be given to the structuring of the learning environment. As Witkin and Moore (1974) suggest, "field-dependent students may need more explicit instructions in problem-solving strategies or more exact definition of outcome performance than field-independent students" (p. 12). This suggestion is supported by the preferences of field dependent new students in the present study for highly structured classes and should be given consideration by faculty working with new students.

Studies should be designed to determine the effect of various instructional strategies on the academic performance of students with differing cognitive styles. Field dependent students in the present study indicated preferences for certain class situations which involved social interaction and situations which provided structure to the environment. The preference for structured situations was also indicated

by field dependent new students. In the designing of future research, particular attention should be paid to the question of whether emphasizing these elements in instruction will improve the academic performance of field dependent students. Specific emphasis should be given to whether they improve the performance of field dependent students who are experiencing academic difficulties.

Recommendations on the implications of cognitive style differences for instruction often include suggestions for strategies to match a student of a particular cognitive style with an instructional approach appropriate for that style. Warren (1974), for example, suggests that, in courses where more than one section is taught, the instructional approach of one section could be geared toward students with a field dependent cognitive style and the instructional approach of another section toward more appropriate strategies for field independent students. The findings of the present study do not suggest such as implications. However, should these findings be replicated for large numbers of students on any community college campus, faculty may want to consider such an approach. Although they may present scheduling and other administrative difficulties, such matching strategies could be particularly helpful to new students in subjects where they have not previously experienced success.

Counseling

Implications are also suggested for counselors and faculty members assisting students with academic difficulties. Since new students have more often experienced some type of academic difficulty, these students should be helped to gain some insight into their own cognitive style. Students consulting with either faculty members or counselors regarding specific academic difficulties could be given information about their own cognitive style and how this might affect the way they process information in a particular course. Faculty members or counselors might also consider helping students develop specific strategies for situations which are incompatible with their style. Research on the design and implementation of specific programs or strategies in this area would be particularly helpful to avoid reinventing the wheel with every student.

Counselors could also consider the use of cognitive style information with students who request assistance with educational and vocational decisions (e.g., Witkin and Cox, 1975). Since research in this area is currently available for four-year programs only, a study should be done to determine the relationship of the cognitive styles of field dependence-independence to program choice in the community college. Specifically, the following studies might be considered.

a. Field dependent new students and field dependent students in the total sample indicated preferences for majors

which involve interpersonal skills and writing and discussion. A study should be undertaken to determine if field dependent students actually select community college programs which emphasize these skills.

b. A descriptive study of the cognitive style of students in the various community college programs should be undertaken. Consideration could be given to identifying programs which seem to attract large numbers of students of one particular style. Consideration could also be given to identifying the cognitive style of faculty members in the various programs.

c. If it were found that there were programs where large numbers of students and faculty were of one particular style, further research should be considered to determine if students whose style differed from the majority were more likely to experience academic difficulties or to drop out of the program.

Institutional Planning

The field dependent cognitive style occurred in 49% of the new student sample in this study. While the new students in this sample were from only six public community colleges, any community college having a significant number of new students might expect to find a significant number of field dependent students in that group. Community college institutional research staff could establish testing programs for new students to determine if this study's findings are

replicable on their campuses. The present study should also be repeated with a larger student sample obtained from a greater number of community colleges.

Sixty-five percent of the field dependent new student sample in this study were found in developmental classes. Since developmental programs have historically been designed for students experiencing academic difficulties, community college educators might consider beginning their own work with cognitive style in these programs. A study similar to the present study could be done to describe the cognitive style of developmental students.

If a community college is interested in providing a variety of instructional alternatives for students, consideration should be given to the finding that a significant number of new students in the community college have a field dependent cognitive style. Those planning and developing instructional alternatives should consider whether or not proposed alternatives would be appropriate for students with a field dependent cognitive style. If the only alternative or additional instructional resources the college provides for students stress individualized, self paced, or analytical work, they may not be providing true alternatives for the field dependent new student. Research on the materials and instructional alternatives available in learning laboratories preferred by students with different cognitive styles would help planners in selecting and designing instructional materials.

Research on instructional implications could also be done by faculty members or departments. However, if a college plans its own research on cognitive style the faculty members and others who participate should be provided with information on cognitive style. Such information can be presented in a college staff development program. Staff development in this area offers interested staff the opportunity to become informed on a new area and to consider the possible effects of cognitive style in their own teaching and counseling.

It is suggested that such staff development involve teams of people, preferably interdisciplinary teams that can work together on instructional implications. Staff development could also be strengthened by the involvement of counselors and administrators on such teams. It is further suggested that this staff development be seen as a continuing process. Teams should have the opportunity to obtain additional information and to ask questions about their own work. Where possible it would be beneficial if they could be in touch with others who are working in this area to share their learnings.

Additional Recommendations for Research

Consideration should also be given to designing studies to determine the relationship of cognitive style to test performance. According to Messick (1970), cognitive styles operate in testing situations and may influence the examinee's score. "It is quite possible that cognitive styles are

already being reflected in standard evaluation devices; however, their operation under these circumstances is not being assessed for evaluation purposes but serves to contaminate the interpretation of other measures" (p. 196).

The present study has focused on field dependent new students. However, 51% of the new students in this study were not field dependent. These students should obviously not be ignored. Research should be done with other cognitive styles and with other areas of individual differences so that implications and recommendations can be made for non-field dependent new students.

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PREFERENCE QUESTIONNAIRE

Directions: In each of the following questions you are presented with two choices. Please read both choices and CHECK the ONE which you would prefer most often. Please answer all questions.

1. I prefer classes where
   ____a. the subject holds my interest
   ____b. the teacher holds my interest.

2. I prefer classes where, when a project is assigned
   ____a. students are assigned to work on it in small groups
   ____b. students are assigned to work on it alone.

3. I prefer classes where, after the teacher introduces the subject
   ____a. the teacher lectures with some time for questions at the end
   ____b. students are given a major responsibility for class discussion.

4. I prefer teaching that stresses
   ____a. lectures and task-oriented classes
   ____b. individual attention and student participation in class.

5. I am most satisfied with my classwork when
   ____a. I get a good grade
   ____b. I feel I have done a good job.

6. I prefer a course when
   ____a. the teacher determines what the course requirements will be and how they will be met
   ____b. the teacher develops optional ways of meeting course requirement with the students.

7. I prefer courses where, when the teacher provides an outline of the course he
   ____a. sticks to the outline for each class
   ____b. frequently deviates from the outline when other things come up in discussion.

8. I prefer course material that is understandable, clearly defined,
   ____a. factual, and stated in uncomplicated terms
   ____b. challenging, and something that gets me thinking even after class is over

9. I prefer the reading I do for a course to be
____a. something I select from a list of options
____b. an assigned textbook

10. I prefer courses which are
____a. more informally organized
____b. highly structured.

11. In selecting a college major, I would be more likely to choose an area which emphasizes
____a. analytical skills, such as math or science
____b. interpersonal skills, such as social work or education.

12. In selecting my major area of study, I would prefer courses involving
____a. writing and discussion
____b. solving math or design problems.

13. If I were majoring in business, I would be more interested in learning about the work of
____a. personnel managers, such as recruiting and hiring employees
____b. production managers, such as making work schedules and ordering supplies.

14. If I were studying psychology, I would be more interested in preparing myself to
____a. do scientific research
____b. work with people who have psychological problems.

15. If I were to study medicine, I would be more interested in specializing in
____a. surgery and performing operations
____b. psychiatry and doing psychotherapy.

16. If I had to select an elective, I would prefer a course in
____a. sociology
____b. math.

17. If I had to select an elective, I would prefer a course in
____a. engineering
____b. education.

18. If I had to select an elective, I would prefer a course in
____a. history
____b. art

19. If I had to select an elective, I would prefer a course in

____a. environmental science
____b. broadcast technology.

20. If I had to select an elective, I would prefer a course in

____a. criminal justice
____b. fire science.

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